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IS 7045 (1973): Method for determination of hydrogen peroxide content in textile materials [TXD 5: Chemical Methods of Test]



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“Knowledge is such a treasure which cannot be stolen”

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IS : 7045 - 1973

(Reaffirmed 2004)

Indian Standard

METHOD FOR DETERMINATION OF HYDROGEN PEROXIDE CONTENT IN TEXTILE MATERIALS

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METHOD FOR DETERMINATION OF HYDROGEN PEROXIDE CONTENT IN TEXTILE MATERIALS

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Indian Standard

METHOD FOR DETERMINATION OF HYDROGEN PEROXIDE CONTENT IN TEXTILE MATERIALS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 31 October 1973, after the draft finalized by the Chemical Methods of Test Sectional Committee had been approved by the Textile Division Council.

0.2 In the textile industry peroxide bleaching is carried out on different machines like kiers, J-boxes, open width bleaching ranges, etc, and is generally used for cotton textiles as this imparts durable whiteness to them. The determination of hydrogen peroxide content on fabrics is important for process control. This method can be used for determining the add-on on the cloth before and after the treatment. This can also be used for determining the strength of peroxide bath at different stages—feeding bath and running bath—for determining the rate of consumption of peroxide during the process.

0.3 In reporting the result of a test made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS: 2-1960*.

1. SCOPE

1.1 This standard prescribes a method for determination of hydrogen peroxide content in textile materials during process.

2. PRINCIPLE

2.1 A small piece of fabric is put in distilled water and then dilute sulphuric acid is added to it and allowed to stand for some time. The solution is then titrated against standard potassium permanganate and the amount of hydrogen peroxide is calculated on the basis of the oven-dry mass of the specimen.

*Rules for rounding off numerical values (*revised*).

3. SAMPLING

3.1 Test samples to determine the peroxide content of fabrics in a lot shall be selected so as to be representative of the lot.

3.2 Test Specimen—Draw at least two test specimens each weighing about 5 g from different portions of the sample under test.

4. APPARATUS

4.1 Flat-Bottom Flask or Berker—of 250-ml capacity.

4.2 Measuring Cylinder

4.3 Burette

4.4 Weighing Balance

5. REAGENTS

5.1 Unless specified otherwise pure chemicals shall be employed in tests and distilled water (*see* IS:1070-1960*) shall be used where the use of water as reagent is intended.

NOTE—'Pure chemicals' shall mean chemicals that do not contain impurities which affect the test results.

5.2 Potassium Permanganate—0.1 N.

5.3 Sulphuric Acid—20 percent (*v/v*).

6. PROCEDURE

6.1 Cut a test specimen weighing approximately 5 g and directly place it in the flat-bottom flask without weighing. Add 100 ml of distilled water and 10 ml of sulphuric acid. Shake the flask and allow it to stand for 5 minutes. Titrate the contents with potassium permanganate till the first permanent pink colouration appears. Note the volume of potassium permanganate used.

NOTE—In case the volume of potassium permanganate consumed is too small, a lower concentration of potassium permanganate shall be used.

6.2 Wash the test specimen with water and dry it to constant mass at $105 \pm 3^\circ\text{C}$ and determine its mass.

6.3 Similarly, test the other test specimens.

*Specification for water, distilled quality (*revised*).

7. CALCULATIONS

7.1 Calculate the percentage of hydrogen peroxide content by the following formula:

$$P = \frac{V}{m} \times 0.17$$

where

P = percentage of hydrogen peroxide,

V = volume of potassium permanganate in ml (*see 6.1*), and

m = mass of the oven-dry test specimen in g (*see 6.2*).

8. REPORT

8.1 Report shall include the following information:

- a) Percentage of hydrogen peroxide content, and
- b) Number of specimens tested.

INDIAN STANDARDS

ON

CHEMICAL METHODS OF TEST FOR TEXTILES

IS:

- 199-1957 Estimation of moisture, total size or finish, ash and fatty matter in grey and finished cotton textile materials
- 200-1969 Copper number of cotton textile materials (*first revision*)
- 244-1969 Viscosity (or fluidity) of solutions of cotton and regenerated celluloses in cuprammonium hydroxide (*first revision*)
- 389-1952 Estimation of small quantities of sulphuric acid and hydrochloric acid in cotton materials
- 1039-1956 Estimation of small quantities of copper, iron, manganese, chromium and zinc in proofed cotton fabrics
- 1185-1957 Relative wetting power of wetting agents
- 1349-1964 Wool fibre content of raw wool (*revised*)
- 1383-1960 Scouring loss in grey and finished cotton textile materials
- 1390-1961 pH value of aqueous extract of textile materials
- 1560-1962 Estimation of carboxylic acid groups in cellulosic textile materials
- 1582-1968 Scouring loss in silk textile materials
- 1689-1960 Barium activity number of cotton textile materials
- 1967-1961 Estimation of residual starch in cotton fabrics after desizing
- 2350-1963 Estimation of residual chlorine in cotton textile materials
- 2369-1967 Absorbency of absorbent textile materials (*first revision*)
- 2969-1964 Added oil content of jute yarn and fabrics
- 3429-1966 Solubility of wool in alkali
- 3430-1966 Solubility of wool in urea-bisulphite solution
- 3456-1966 Water soluble matter of textile materials
- 4202-1967 Chloride content of textile materials
- 4203-1967 Sulphate content in textile materials
- 4390-1967 Ether soluble matter in textile materials
- 5151-1969 Evaluating the relative efficiency of wetting agents for mercerization
- 5152-1969 Benzene-methyle alcohol soluble matter in textile materials
- 5449-1969 Water soluble chromate in textile materials